



Summary of Fishery Surveys Rusk Lake, Rusk County, 2017

WDNR's Fisheries Management Team from Park Falls completed a nighttime electrofishing survey in late spring 2017 to assess the fish community and characterize the status of sportfish populations in Rusk Lake. Quality, preferred, and memorable sizes referenced in this summary are based on standard proportions of world record lengths developed for each species by the American Fisheries Society. "Keeper size" is our own description applied to bluegill ≥ 7 inches long and black crappie ≥ 9 inches long, based on known angler behavior.

Survey Effort

On June 5, 2017 with water temperature at 75°F, our survey was well-timed to represent the abundance and size structure of largemouth bass and bluegill populations at the height of their spawning activities. In clearer-than-average water we observed bluegill guarding their nests. Following our standardized method, we sampled all fish species in one complete shoreline circuit (0.58 mile) in 0.27 hour. In the only other known Rusk Lake fishery evaluations, the crews apparently targeted all species in two consecutive electrofishing laps in September 1973 and 1993. Low conductivity hampered our electrofishing capture efficiency, especially for largemouth bass.

Habitat, Water Quality, and Public Access

Rusk Lake is a 12-acre, deep seepage lake with no inlet or outlet located about 6 miles southwest of Weyerhaeuser, WI. File references and the adjacent town road name suggest that Rusk Lake is sometimes called Buck Lake—not to be confused with Bucks Lake, a shallow 83-acre impoundment in the Rusk County Forest about 16 miles north of Rusk Lake. Rusk Lake appears to be a deep, steep-sided kettle lake that formed as a large ice block deposited in glacial debris gradually thawed. Maximum depth is 71 feet, and average depth is 21 feet. Shoreland vegetation is roughly 40% upland hardwoods, 25% upland grass, and 35% marsh meadow. Near shore the bottom is predominantly sand (70%) with some muck (30%) near the wetlands. A dense band of submerged and floating vegetation encircles the entire perimeter.

From phosphorus and chlorophyll concentrations and satellite measurements of water clarity, we can classify Rusk Lake's biological productivity as moderate. Despite its mesotrophic status, Rusk Lake has occasionally experienced algae blooms in summer and winterkill losses—fish mortality from oxygen depletion in the ice-covered season. Dissolved oxygen concentrations < 1 mg/l recorded at all depths below 6 feet on March 15, 1998 prompted additional water quality sampling. Narrow-ranging conductivity readings at depths 6 – 65 feet did not indicate meromixis—lake stratification that can occur

when incomplete circulation results in a steep salinity gradient that keeps the lower portion of the water column perennially isolated from the upper layer. In November 1998 WDNR Fishery Management staff inspected the site to evaluate whether artificial lake aeration could avoid or reduce winterkill. However, in subsequent monitoring they found dissolved oxygen concentration ≥ 1 mg/l down to 39 feet on March 15, 1999 and ≥ 5.2 mg/l down to 50 feet on January 12, 2000, so lake aeration was not pursued further. We found no records of winterkill or very low winter oxygen levels noted since then.

A lake map dated 1974 indicates three fish cribs were installed near the 10-, 15-, and 20-foot depth contours in the southwest corner of the lake. The Town of Rusk maintains a public boat access on the west shore about 100 yards south of the privately-owned pavilion, boat ramp, and shorefishing pier.

Summary of Results

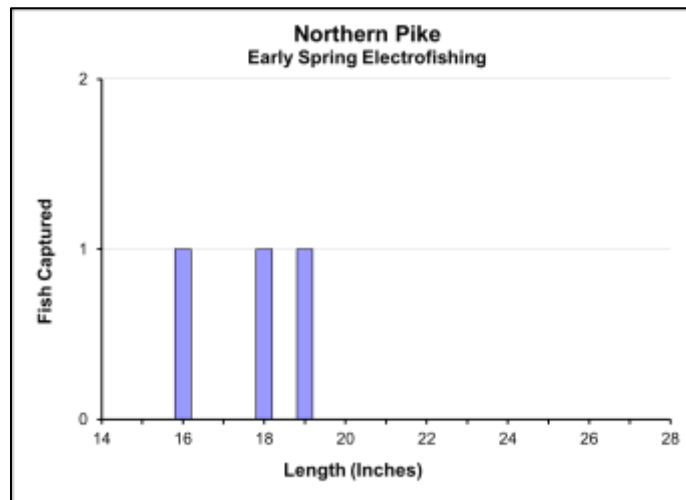
Our sample included nine fish species, most of which were recorded in previous surveys. We did not find common shiners recorded in 1973, but we did find a pumpkinseed and a central mudminnow—two species not previously documented in Rusk Lake. Just like in the September 1993 survey, we found no sign of the 362 walleyes stocked as 5-inch fingerlings in fall 1991 and the 385 walleyes planted as 3.2-inch fingerlings in August 1992.

Northern Pike



Late Spring Electrofishing

Captured 5.2 per mile or 11 per hour ≥ 14 "	
Quality Size ≥ 21 "	0%
Preferred Size ≥ 28 "	0%
Memorable Size ≥ 34 "	0%



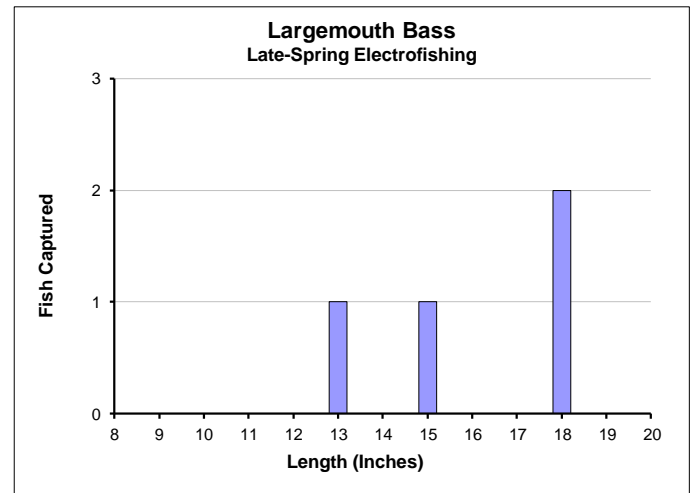
Our sample included no quality-size northern pike despite the relatively low population abundance indicated by our electrofishing capture rate. After adjusting for different electrofishing efforts, pike were about half as abundant in our contemporary survey than they were in September 1973 when 13 of 14 pike captured were 12.6 - 18.4 inches and one was 29.9 inches long. One large pike and one 11-inch pike were seen in the September 1993 electrofishing survey. Though northern pike population status is better assessed by netting at ice-out, these snapshots reveal a consistently poor size structure that would disappoint most anglers.

Largemouth Bass



Late Spring Electrofishing

Captured 6.9 per mile or 15 per hour $\geq 8"$	
Quality Size $\geq 12"$	100%
Legal Size $\geq 14"$	75%
Preferred Size $\geq 15"$	75%



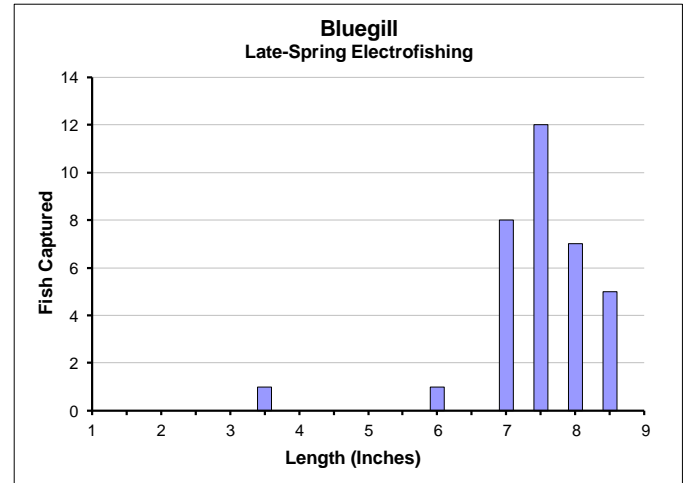
Our late spring electrofishing capture rate of largemouth bass ≥ 8 inches long point toward low population abundance. However, if we include the 7 or 8 adults that we saw but did not capture, then we can describe largemouth bass abundance as moderate and substantially higher than adjusted catch rates in September 1973 and 1993 indicated. The evasive bass appeared to be within the size range of those we dip-netted. We believe that the spawning bass captured and seen in spring 2017 represent adult abundance and size distribution, but not the recruitment detected in both previous fall surveys.

Bluegill



Late Spring Electrofishing

Captured 59 per mile or 127 per hour $\geq 3"$	
Quality Size $\geq 6"$	97%
Keeper Size $\geq 7"$	94%
Preferred Size $\geq 8"$	35%



Rusk Lake's bluegill population offers the best opportunity for anglers who want to catch and keep a meal. We did not take bony structures for age analysis. However, our low electrofishing capture rate and the higher-than-average proportion of preferred-size fish in our sample suggest that bluegill abundance is sufficiently moderated to keep them growing at a satisfactory rate. With few predators on hand to keep bluegills numbers in check, we suspect that self-regulating social and behavioral mechanisms are effectively controlling bluegill reproductive success to avoid crowding, food competition, and impaired growth that can often occur in the bluegill populations when their abundance is unrestrained.

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Written by: Jeff Scheirer—Fishery Biologist, November 20, 2017.

Reviewed and approved for web posting by: Mike Vogelsang—Northern Administrative District Supervisor, July 15, 2019.

LAKE SURVEY MAP

RUSK
LAKE
SEC. 15 T. 33 N. R. 9 W.
RUSK
COUNTY

